Selected Instruments and Related Products: 2004

Issued August 2005

MA334B(04)-1

Current Industrial Reports

NOTICE

The MA334B annual survey is discontinued as of December 2004. The 2004 annual report is the last publication for this survey.

The 2005 new annual reports MA334A, "Analytical and Biomedical Instruments," MA334C, "Control Instruments," MA334D, "Defense, Navigational and Aerospace Electronics," and MA334T, "Meters and Test Devices" will include data from selected instruments and related products.

Current data are released electronically on Internet for all individual surveys as they become available. Use: http://www.census.gov/mcd/. Individual reports can be accessed by choosing "Current Industrial Reports (CIR)," clicking on "CIRs by Subsector;" then choose the survey of interest. Follow the menu to view the PDF file or to download the worksheet file (XLS format) to your personal computer.

These data are also available on Internet through the U.S. Department of Commerce and STAT-USA by subscription. The Internet address is: www.stat-usa.gov/. Follow the prompts to register. Also, you may call 202-482-1986 or 1-800-STAT-USA, for further information.

SUMMARY OF FINDINGS

During 2004, the total value of shipments of selected instruments and related products totaled $80.8 billion, up 10.1 percent from the revised 2003 value of $73.4 billion. The 2004 figure includes automatic regulating, control, and solenoid valves, $2.7 billion, up 7.1 percent from 2003; search, detection, navigation, guidance, aeronautical, and nautical systems, instruments, and equipment, $36.4 billion, an increase of 11.2 percent from 2003; laboratory apparatus and furniture, $2.1 billion, up 4.6 percent from 2003; controls for monitoring residential and commercial environments, and appliance regulating controls, $2.1 billion, up 8.8 percent from 2003; process control instruments, $6.5 billion, up 10.7 percent; fluid meters and counting devices including motor vehicle instruments, $4.6 billion, down 3.1 percent from 2003; test equipment and instruments to measure electricity, $10.7 billion, up 16.8 percent from 2003; analytical and scientific instruments (except optical), $8.8 billion, an increase of 11.3 percent from 2003; optical instruments and lenses, $2.7 billion, an increase of 14.6 percent from 2003; test equipment, instruments, and measuring and controlling devices, not elsewhere classified (n.e.c.), $4.7 billion, up 3.2 from 2003.

For general CIR information, explanation of general terms and historical note, see the appendix.

Address inquiries concerning these data to Investment Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call Jennifer Lee, 301-763-9057.

For mail or fax copies of this publication, please contact the Information Services Center, MCD, Washington, DC 20233-6900, or call 301-763-4673.

U S C E N S U S B U R E A U

Helping You Make Informed Decisions

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU

Table 1. Value of Shipments of Selected Instruments and Related Products: 1999 to 2004
[Millions of dollars]

Product class code	Product description	2004		2003	2002	2001	2000	1999
332911F	Automatic regulating and control valves	2,222.9	r/	2,063.9	2,203.3	2,260.7	2,299.4	2,347.2
332911H	Solenoid-operated valves (except nuclear and fluid power transfer)	500.4		479.7	454.1	437.8	462.7	486.0
3345111	Aeronautical, nautical, and navigational instruments	2,398.5		2,231.8	2,693.1	2,861.2	2,729.5	2,799.8
3345113	Search and detection, navigation and guidance systems and equipment	34,026.8		30,535.7	27,272.2	29,340.0	27,165.3	24,597.7
3391118	Laboratory apparatus and laboratory furniture	2,149.1		2,055.2	1,972.8	2,407.2	2,077.8	1,782.1
3345120	Controls for monitoring residential and commercial environments and appliance regulating controls	2,099.5	r/	1,930.5	2,539.3	2,537.6	3,259.5	3,013.4
3345130	Process control instruments	6,485.0		5,860.0	6,213.0	6,698.0	7,311.3	6,825.4
3345141	Integrating and totalizing meters for gas and liquids	1,421.7		1,329.2	1,232.8	1,094.5	1,062.5	1,081.0
3345143	Counting devices	534.2	r/	504.8	446.8	413.7	511.5	391.3
3345145	Motor vehicle instruments	2,688.9	r/	2,957.8	2,801.1	2,900.0	3,111.0	2,851.3
3345151	Integrating instruments, electrical	620.4		631.0	586.9	531.5	493.2	472.9
3345153	Test equipment for testing electrical, radio and communication circuits, and motors	9,011.3		7,563.8	7,682.5	10,628.0	13,982.0	11,034.0
3345155	Instruments to measure electricity	393.3		389.7	384.5	371.2	439.7	365.0
3345160	Analytical and scientific instruments (except optical)	8,814.9		7,918.2	7,271.9	7,873.3	6,808.2	7,581.2
3333141	Sighting, tracking, and fire-control equipment, optical type	787.5	r/	687.7	607.9	512.1	432.5	534.3
3333143	Optical instruments and lenses	1,938.3	r/	1,702.6	2,174.4	2,302.9	2,698.5	2,354.4
3345192	Aircraft engine instruments (except flight)	763.0	r/	888.2	798.8	777.6	818.7	657.9
3345194	Physical properties and kinematic testing equipment	1,712.9	r/	1,581.3	1,703.5	1,718.1	1,845.3	1,736.4
3345195	Nuclear radiation detection and monitoring instruments	592.4		534.4	517.3	551.3	568.2	539.1
3345197	Commercial, geophysical, meteorological, and general-purpose instruments	1,357.9		1,290.3	1,383.8	1,272.7	1,203.6	1,080.7
3345199	Surveying and drafting instruments	233.2	r/	220.5	255.2	289.8	331.7	313.7

r/Revised by 5 percent or more from previously published data.

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2004 and 2003
[Quantity in number of units. Value in thousands of dollars.]

Product code	Product description	No. of cos.	2004 Quantity		2004 Value		2003 Quantity		2003 Value
332911F	Automatic valves (regulating and control type, except nuclear)	154	(X)	a/	2,222,867		(X)	a/r/	2,063,855
	Automated control valves:								
	Pneumatic actuated	(NA)	(X)		623,201		(X)		578,727
	Sliding stem valves	(NA)	(NA)		314,656		(NA)		309,931
332911F101	Globe body	23	191,411		208,056		189,382		210,621
332911F103	All other types	23	935,806	a/	106,600		855,085		99,310
	Rotary valves	(NA)	(NA)		130,739		(NA)		105,454
332911F105	Ball	13	45,433		54,194		46,501	a/	46,021
332911F107	Butterfly	13	50,405		54,240		33,883		41,358
332911F109	All other rotary valves, including eccentric disk	12	13,873	a/	22,305	b/	11,335	r/	18,075
332911F111	All other pneumatic power-operated control valves	15	82,049	a/	28,936	a/	73,489		26,382
332911F113	Parts for pneumatic actuated valves sold separately	25	(X)		148,870		(X)		136,960
	All other actuation, including electric-actuated and electro-hydraulic actuated	(NA)	(X)		303,091		(X)		282,720
	Sliding stem valves	(NA)	(NA)		70,846		(NA)		58,299
332911F115	Globe body	12	7,612		8,042		8,268		6,248
332911F117	All other types	15	259,036	a/	62,804		213,715	a/	52,051
332911F122	Rotary valves, including ball, butterfly, and eccentric disk 1/	11	(D)		81,410		(D)		67,935
332911F125	All other power-operated (except pneumatic) control valves 1/	14	4,253	a/	134,475		4,837	a/r/	141,381
332911F127	Parts for all other power-operated (except pneumatic) control valves	15	(X)	a/	16,360		(X)	a/	15,105
332911F129	Valve actuators, sold separately	23	74,393		119,716	a/	81,021		111,055
	Regulator valves:								
332911F131	Remote-sensing direct actuated temperature regulators 1/	19	3,564		55,211		(D)		55,858
332911F133	Self-contained direct actuated pressure regulators (except instrument type and safety relief valves) 1/	38	5,549		300,913		4,211		241,747
332911F135	Pilot (internal and external) actuated pressure regulators 1/	30	387	a/	122,861	a/	316	a/r/	97,061
332911F137	Self-contained direct-acting precision and instrument-type pneumatic (air and gas) pressure regulators 1/	11	344		33,346		311		31,939
332911F139	Flow regulators for gas, vapors, or liquids 1/	44	34,219		261,291	b/r/	31,983	r/	246,355
332911F141	Other regulator valves 1/	29	6,978		314,938	c/	6,320	a/r/	337,093
332911F143	Parts for regulator valves, sold separately	40	(X)		88,299		(X)		81,300
332911H	Solenoid-operated valves (except nuclear and fluid power transfer)	50	(X)		500,422		(X)	a/	479,704
	Solenoid-operated valves (except power transfer valves):								
	Commercial/industrial types:								
332911H101	Two-way 1/	42	4,596		278,917	r/	4,557	a/	268,274
332911H103	Three-way 1/	20	1,039		47,304	r/	942	r/	46,334
332911H106	Other solenoid-operated valves, including household appliance type (except power transfer valves)1/	12	(D)		138,035		(D)		128,784
332911H109	Parts, components, and operators for solenoid-operated valves (except nuclear and fluid power transfer valves) sold separately	19	(X)		36,166		(X)		36,312
3345111	Aeronautical, nautical, and navigational instruments (except aircraft engine instruments)	86	(X)	b/	2,398,499		(X)	a/	2,231,768
	Flight and navigation sensors, transmitters, and displays:								
3345111101	Compasses (all types)	17	(X)	b/	329,751		(X)	b/r/	270,069
3345111103	Altimeters (except radio and radar altimeters)	8	(X)		57,505		(X)	b/	43,496
3345111105	Airspeed indicators, including mach-meters and air data computers)	18	(X)		292,560		(X)		317,517
3345111107	Acceleration indicators and systems components	9	7,787	c/	50,175	a/	14,647	c/	72,661
3345111110	Rate-of-climb indicators, including angle-of-attack indicators	9	8,406	c/	34,704	c/	13,559		34,578
3345111113	Artificial horizon flight instruments	6	4,681	b/	20,411	b/	5,434		20,415
3345111115	Other aerospace and navigational instruments	28	(X)		729,724		(X)	r/	633,944

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2004 and 2003
[Quantity in number of units. Value in thousands of dollars.]

Product code	Product description	No. of cos.	2004 Quantity		2004 Value		2003 Quantity		2003 Value
	Gyroscopes, sold separately:								
3345111217	Vertical 2/	3	(D)		(D)		(D)		(D)
3345111219	Directional 2/	5	(D)		(D)		(D)		(D)
3345111221	Free, torqued and untorqued 2/	1	(X)		(D)		(X)		(D)
3345111223	Rate, inertial grade 2/	4	(X)		(D)		(X)		(D)
3345111225	Rate, noninertial grade 2/	3	(X)		189,453		(X)		205,295
	Airframe equipment instruments:								
3345111227	Position indicators (mechanical, as for landing gear, cowl flaps, stabilizers, etc.)	8	(X)		15,073		(X)		15,660
3345111229	Hydraulic system (both electrical and mechanical measuring means, as for liquid level and temperature and pressure indicators)	10	(X)	a/	33,911		(X)	a/	43,523
3345111231	Cabin environmental measuring and control instruments (air-conditioning and heating, cabin pressure, oxygen, etc.)	9	(X)		96,982		(X)		57,683
3345111233	Other aerospace flight instruments	17	(X)		302,465		(X)		297,086
3345111335	Nautical instruments (all types, including temperature, speed, pitch, and roll instruments and system components, etc.)	10	b/ 29,302		68,093	c/	28,088		66,775
3345111437	Parts and components for aeronautical, nautical, and navigational instruments (except aircraft engine instruments, sold separately)	28	(X)		177,692		(X)		153,066
3345113	Search and detection systems and navigation and guidance systems and equipment	221	(X)		34,026,762		(X)		30,535,716
3345113101	Light reconnaissance and surveillance electronic systems and equipment (infrared, ultraviolet, and visible light)	38	(X)		4,060,198		(X)		3,531,259
3345113103	IFF equipment	10	(X)		372,969		(X)	r/	312,959
3345113105	Proximity fuses	3	(X)		(D)		(X)		(D)
	Radar systems and equipment:								
	Search, detection, and acquisition radar systems and equipment (BMEWS, airborne and other early warning radar, air traffic control radar, air defense and fighter control radar, ship radar, harbor control radar, meteorological radar, etc.):								
3345113207	Airborne and missile/space radar	22	(X)		2,331,027		(X)		2,290,947
3345113209	Ship (marine) radar 3/	11	(X)		(D)		(X)		(D)
3345113211	Ground radar 3/	12	(X)		2,059,194		(X)		1,624,705
	Tracking radar systems and equipment (fire control, bombing, bombing-navigational radar, aircraft and missile tracking radar, etc.):								
3345113313	Airborne and missile/space radar 4/	9	(X)		(D)		(X)		(D)
3345113315	Ship (marine) radar 4/	8	(X)		(D)		(X)		(D)
3345113317	Ground radar	18	(X)		819,223		(X)		882,211
	Instrumentation radar systems and equipment altimeters, highway speed control radar, missile and space satellite tracking range radar, GCA and other precision approach radar, etc.):								
3345113319	Airborne, missile/space and ship (marine) radar	7	(X)		58,139		(X)		58,376
3345113321	Ground radar	3	(X)	a/	155,074		(X)	r/	138,002
3345113323	Electronic checkout, monitoring, evaluation, and other electronic support equipment for radar systems	9	(X)		98,091		(X)		84,202
	Sonar search, detection, tracking and communication systems and equipment including ASW (sonar telephone communication equipment, depth finding, fire control, fusing, guidance, hydro-phones, mapping, sonabuoys, navigation, sonar fish finders,sonar range instrumen-tation, and other):								
3345113425	Surface ship applications (destroyers, destroyer escorts, etc.) 4/	16	(X)		(D)		(X)		(D)
3345113427	Submarine applications	11	(X)		281,329		(X)		381,103
3345113429	Airborne 4/	11	(X)		4,591,674		(X)		3,962,768

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2004 and 2003
[Quantity in number of units. Value in thousands of dollars.]

Product code	Product description	No. of cos.	2004 Quantity		2004 Value		2003 Quantity		2003 Value
3345113431	Electronic checkout, monitoring, evaluation, and other electronic support equipment for sonar systems and submerged fixed systems	5	(X)		(D)		(X)		(D)
3345113433	Specialized command and control data processing and display equipment, sold separately from complete systems	16	(X)		712,854		(X)	r/	570,401
3345113434	Search, detection, identification, and tracking laser systems and equipment	1	(X)		(D)		(X)		(D)
3345113435	Search, detection, identification, and tracking systems and equipment, n.e.c.	28	(X)		1,674,880		(X)		1,516,072
	Electronic warfare systems and equipment:								
	Countermeasures equipment:								
3345113437	Jamming equipment, communications, and radar	18	(X)		2,704,945		(X)		2,198,166
3345113441	Other active countermeasures equipment, excluding passive materials such as chaff, window, needles, rope, etc.	9	(X)		104,576		(X)		69,239
3345113443	Specialized electronic and communication intelligence equipment, including specially designed DF equipment, signal reduction and processing equipment, and signal analyzers and display equipment	20	(X)		3,074,995		(X)		2,689,612
	Missile and space vehicle systems and equipment (beam riders, command guidance, inertial systems, infrared homing systems, radar systems, stellar trackers, television systems, combination systems, etc.):								
3345113545	Missile-borne and space-vehicle-borne equipment	32	(X)		3,604,543		(X)		3,437,659
3345113547	Nonmissile and space vehicle guidance equipment (ground, ship, or airborne command guidance systems, etc.)	15	(X)	b/	334,195		(X)	a/r/	439,512
3345113549	Electronic checkout, launching, and other missile and space vehicle support systems (ground, ship, and air)	14	(X)	c/	809,253		(X)	c/	704,444
	Navigation systems and equipment, navigational aids for aircraft, ship, and ground navigation (auto pilots, beacons, transponders, collision warning devices, DECCA, DME, ILS, Doppler navigation systems, inertial navigation systems, optical/laser LORAN, radio compasses and direction finders, SHORAN, TACAN, VOR, VORTAC equipment, etc.):								
	Airborne navigational systems:								
3345113651	Radio navigation receivers and displays, including OMNI, radio magnetic, glide slope/localizer, DME, etc.)	20	(X)	a/	754,095		(X)	a/r/	648,422
3345113653	Airborne integrated data systems/-flight recorders	8	(X)		217,769		(X)		208,037
3345113655	Distance measuring equipment (DME) 5/	6	(X)		(D)		(X)		(D)
3345113657	Flight directors/situation display 5/	5	(X)		(D)		(X)		(D)
3345113659	Heads-up display (HUD) systems 5/	3	(X)		(D)		(X)		(D)
3345113661	Inertial navigation systems	10	(X)		929,283		(X)	r/	844,486
3345113663	Proximity warning/collision avoidance equipment	5	(X)		537,970		(X)		363,085
3345113665	Complete automatic pilots 5/	7	(X)		(D)		(X)		(D)
3345113667	Other airborne navigational systems 5/	17	(X)		1,645,513		(X)		1,477,522
3345113669	Surface (ship and ground) navigational systems	30	(X)	b/	375,982		(X)	a/	353,112
3345113673	Electronic checkout, monitoring, evaluation, and other electronic support equipment for navigational systems and equipment	29	(X)		603,513		(X)		627,509
3345113681	All other search and detection, navigation and guidance systems and equipment, not specified above	6	(X)		(D)		(X)		(D)
3391118	Laboratory apparatus and laboratory furniture	150	(X)	a/	2,149,053		(X)	a/	2,055,194
3391118212	Laboratory balances and scales	9	(D)		52,929		288,843		33,488
3391118215	Laboratory furnaces and ovens	21	(X)		33,972		(X)		28,960
3391118218	Laboratory centrifuges	13	32,955	b/	95,488	a/	23,744	a/	84,731
3391118225	Laboratory sterilizers and autoclaves	11	(X)		246,974		(X)		222,835
3391118229	Laboratory burners and hotplates	7	(X)		10,819		(X)		9,768
3391118233	Laboratory granulators, mills, and other particle size reduction apparatus	7	(X)		1,307		(X)		1,096
3391118235	Laboratory drying and evaporation apparatus	15	(X)		27,026		(X)		29,063

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2004 and 2003
[Quantity in number of units. Value in thousands of dollars.]

Product code	Product description	No. of cos.	2004 Quantity		2004 Value		2003 Quantity		2003 Value
3391118237	Laboratory blenders, mixers, shakers, dispensers, fraction collectors, and other liquid sample preparation apparatus	24	(X)		119,462		(X)	b/	135,507
3391118239	Laboratory incubators	13	31,805		60,099	b/	31,267		58,492
3391118241	Environmental test chambers	23	b/ 11,534	c/	175,907	b/	11,143	c/r/	160,955
3391118243	Laboratory freezers 6/	10	(D)		(D)		(D)		(D)
3391118231	Laboratory furniture, including cabinets, cases, benches, tables, stools, reagent shelves, etc. 6/	16	(X)		(D)		(X)		(D)
3391118233	Parts and components for laboratory furniture, sold separately 6/	4	(X)		382,957		(X)		378,485
3391118251	All other laboratory apparatus, n.e.c.	99	(X)	a/	942,113		(X)	a/	911,814
3345120	Controls for monitoring residential and commercial environments and appliance regulating controls	108	(X)	a/	2,099,535		(X)	a/r/	1,930,513
	Automatic controls of the type principally used as components of air conditioning, refrigeration, and comfort heating, including pneumatic controls:								
3345120102	Temperature responsive (thermostats) 1/	35	a/ 38,127		381,492	b/	41,409	r/	378,524
3345120105	Pressure responsive (pressurestats) 1/	10	(D)		7,871		1,358		10,919
3345120107	Hydronic responsive 1/ 7/	4	a/ 602		14,102		(D)		(D)
3345120113	Liquid level 1/	10	(D)	b/	39,159		(D)	b/r/	33,659
3345120115	Igniters 1/ 7/	7	26,392		146,866		(D)		(D)
3345120219	Microprocessor-based load programmers for buildings energy control 1/	12	(D)	b/	59,363		(D)	b/	63,965
3345120221	Computerized energy control systems for buildings	10	637,635	a/	275,665	r/	625,365	a/r/	246,046
3345120222	Lighting controls, including occupancy and motion sensors, lighting control panels, dimming control systems, timing devices, etc. 7/	6	501,984		17,123		(D)		161,041
3345120223	Other	31	(X)	a/	634,211		(X)		492,894
	Controls for major appliances such as domestic laundry and cooking appliances, refrigerators and freezers, vending machines, air conditioners, etc.:								
3345120225	Temperature responsive 1/	13	110,231	a/	226,546		99,434	a/r/	230,610
3345120227	All other controls for appliances 1/	12	49,100		217,340		47,098		240,429
3345120229	Parts and components for controls monitoring residential and commercial environments and for appliance regulating controls, sold separately	24	(X)		79,797		(X)		72,426
3345130	Process control instruments	481	(X)	b/	6,484,995		(X)	a/	5,859,952
	General-purpose control system instruments (commonly call receiver-type), operating from standardized transmission signals (electrical types ac or dc milliampere, millivolt, or telemetering signals; pneumatic types, 3 to 15 and 3 to 27 p.s.i. signals):								
	Electronic systems - unified architecture type:								
3345130101	Controllers (recording, indicating, or blind)	30	c/ 471,481	c/	596,837	c/	472,546		615,846
3345130103	Recorders, with or without self-contained set-point stations	10	c/ 89,844	a/	66,124	c/	89,863	b/r/	56,908
3345130105	Indicators, with or without self-contained set-point stations	17	113,477		21,437	a/	95,889	a/r/	17,889
3345130107	Auxiliary stations and analog computing devices associated with the above, including manual loaders, auto-to-manual stations, ratio stations, adders, multipliers, integrators, etc.	5	(D)		(D)		(D)		112,153
3345130109	Electronic systems - nonunified architecture type	54	(X)		791,242		(X)	r/	767,334

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2004 and 2003
[Quantity in number of units. Value in thousands of dollars.]

Product code	Product description	No. of cos.	2004 Quantity		2004 Value		2003 Quantity		2003 Value
3345130111	Industrial multifunction process computers	43	(X)		409,455		(X)	a/	307,546
	Pneumatic systems, including all system-type control, display and computing instruments actuated from standardized pneumatic transmission signals:								
3345130113	Controllers (recording, indicating, or blind) 8/	8	(D)		(D)		(D)		(D)
3345130119	Auxiliary stations and analog computing devices associated with the above, including manual loaders, auto-to-manual stations, ratio stations, adders, multipliers, integrators, etc. 8/	2	(D)		(D)		(D)		(D)
3345130122	Other pneumatic systems, including recorders, indicators, and receiver-type gauges 8/	9	(D)		30,238		(D)	a/	40,687
3345130123	Annunciators, industrial; electro-mechanical and solid-state types	6	c/ 40,698	a/	20,564		34,428	a/r/	17,906
	Temperature measuring instruments, excluding general-purpose receiver-type instruments:								
	Electrical and electronic measuring types (thermocouple, resistance temperature detector, radiation, optical, thermistor, and other electrical sensors):								
3345130225	Direct-deflecting types (controllers for all types of electrical temperature sensors) 9/	5	(D)		(D)		(D)		(D)
3345130227	Direct-deflecting types (indicators and recorders for all types of electrical temperature sensors) 9/	5	(D)	b/	15,295		(D)	b/	13,871
3345130231	Electromechanical self-balancing types (indicators, recorders, and integrators for all types of electrical temperature sensors)	4	(D)		5,661		(D)	a/	5,057
3345130233	Electronic controllers for all types of electrical temperature sensors	20	a/ 691,718	a/	144,228	a/	519,539	a/r/	111,026
3345130235	Digital indicators for all types of electrical temperature sensors, excluding data loggers	21	b/ 58,546	b/	16,823	a/	50,787	b/	14,931
	Transmitters, producing standardize electric or pneumatic analog transmission signals for all types of electrical temperature sensors:								
3345130237	Electric 10/	20	(D)		(D)		(D)		(D)
3345130239	Pneumatic 10/	2	(D)	b/	41,587		(D)	b/	43,938
	Mechanical measuring types, filled systems (liquid filled, vapor pressure, gas filled, and mercury filled types):								
3345130241	Indicating or recording controllers	8	(D)		11,382		(D)		10,538
3345130243	Recorders, noncontrol	11	(D)		11,274		(D)		11,165
3345130245	Indicators only, excluding indoor-outdoor and other household or appliance type thermometers	11	386,861	a/	10,567		383,984	a/	9,468
3345130247	Transmitters producing standardized electric or pneumatic analog transmission signals	8	b/ 9,446	b/	3,577	b/	10,333	b/	4,284
	Primary temperature sensors, excluding aircraft types:								
3345130249	Thermocouples and thermocouple lead wire	49	(X)		217,000		(X)	a/r/	191,313
3345130251	All other types (resistance temperature detectors, radiation and optical sensors, thermistors, etc.)	46	(X)	a/	147,676		(X)		131,212
	Pressure (gauge, absolute vacuum) and draft measuring instruments, excluding general-purpose receiver-type instruments:								
3345130253	Indicating or recording controllers 1/ 11/	17	(D)		(D)		(D)		(D)
3345130255	Recorders, noncontrol 11/	7	(D)	c/	84,815		(D)		98,321
	Indicators only, excluding receiver-type gauges:								
3345130257	3-inch diameter and over 1/	18	3,150		75,301		4,130		81,213
3345130259	Under 3-inch diameter 1/	14	25,916		74,184		26,592		76,672

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2004 and 2003
[Quantity in number of units. Value in thousands of dollars.]

Product code	Product description	No. of cos.	2004 Quantity		2004 Value		2003 Quantity		2003 Value
	Transmitters producing standardized analog transmission signals:								
3345130261	Transmitters producing standardized electronic analog transmission signals 1/	27	c/ 1,152		196,151		(D)		(D)
	Flow and liquid level measuring instruments, excluding general-purpose receiver-type instruments:								
	Differential pressure types:								
3345130265	Indicating or recording controllers	6	127,424		11,809		125,810		11,299
3345130267	Recorders, noncontrol, and indicators, noncontrol	8	66,373		24,190		71,685		25,918
	Transmitters producing standardized analog transmission signals:								
3345130269	Transmitters producing standardized electronic analog transmission signals	16	(D)		(D)		(D)		(D)
3345130271	Transmitters producing standardized pneumatic analog transmission signals	5	(D)		(D)		(D)		(D)
3345130273	Primary pressure sensors (load cells, strain gauges, etc.)	10	41,590		18,514		30,609		12,651
3345130275	Primary flow elements, including orifice plates, venturi tubes, low tubes, flow nozzles, pitot tubes, etc.	16	222,656		57,340		237,665		54,368
	Electromagnetic flowmeters:								
3345130277	Primary device (magnetic flow tube)	10	b/ 61,493		51,642	b/	70,758		51,108
3345130279	Secondary device (magnetic transmitter, recorder, indicator or controller which receives signal directly from primary device)	9	c/ 36,059		28,330	c/	32,289		24,113
3345130281	Capacitance, ultrasonic, and other electronic types, including magnetic resonance, vortex-precession, and vortex-shedding type elements	34	a/ 152,224	b/	146,284	c/	132,589	b/	130,605
3345130283	Variable area-controlling, recording, indicating, and transmitting instruments and associated primary flow elements 1/	13	(D)		103,637		(D)		106,317
3345130285	Float and displacement (controlling, recording, indicating, and transmitting instruments and associated primary flow elements) 1/	25	a/ 1,915		109,099	a/	1,810		107,747
3345130287	Turbine and propeller: controlling, recording, indicating, and transmitting instruments and associated primary flow elements	12	90,046	a/	33,589	r/	80,676	a/r/	30,428
3345130289	Mass flow, i.e., controlling, thermal-controlling, recording indicating, and transmitting instruments and associated primary flow elements	12	129,800		259,453		86,041		231,455
3345130291	Other types: controlling, recording, indicating, and transmitting instruments and associated primary flow elements	21	c/ 949,346		161,187	c/r/	698,020		137,597
3345130293	Humidity instruments (controlling, recording, indicating, and transmitting, and associated primary humidity elements, excluding home and general-purpose type)	10	a/ 34,667	c/	37,146	a/	31,014	c/	34,443
	Continuous process instruments for on-stream gas and liquid analysis, including indicators, recorders, controllers, and analysis electrodes and cells, excluding laboratory analysis types:								
3345130295	Chromatographic analyzers	12	c/ 5,927		67,038	c/r/	4,761	r/	62,284
3345130297	Infrared analyzers	7	(D)	c/	25,030		(D)	r/	23,955
3345130299	Oxygen analyzers	16	b/ 39,335		78,331	b/	37,539		75,143
334513021A	Other gas analyzers	23	b/ 82,920	c/	165,702	b/	70,145	a/r/	155,757
334513021C	Ph analyzers	9	167,848		30,334		199,411		29,292
334513021E	Other liquid analyzers	19	c/ 126,105	b/	75,413	c/	120,255	b/	86,246
	Instruments for all process variables not listed above (speed, weight, position, sequence, density, specific gravity, mechanical load, electrical load, millivolts):								
	Electrical and electronic measuring types:								
334513011G	Direct-deflecting type controllers, indicators, and recorders	7	(D)		67,071	c/	69,512	b/	47,400

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2004 and 2003
[Quantity in number of units. Value in thousands of dollars.]

Product code	Product description	No. of cos.	2004 Quantity		2004 Value		2003 Quantity		2003 Value
334513021L	Digital indicators	14	a/ 68,067	a/	35,559	a/	67,384	a/	34,842
334513021M	Transmitters producing standardized electric or pneumatic analog transmission signals	9	(D)	a/	11,270	a/r/	106,793	a/r/	11,934
	Mechanical measuring types:								
334513021P	Indicating or recording controllers and recorders, noncontrol	5	(D)		2,043		(D)		1,333
334513021R	Indicators only	5	(D)		12,362		(D)		11,915
334513021T	Transmitters producing standardized electric or pneumatic analog transmission signals	9	(D)		41,875		(D)		45,964
	All other industrial process instruments:								
334513022A	Other temperature instruments	23	(X)	b/	152,326		(X)	b/	137,536
334513022C	Other flow and liquid level instruments	24	(X)	b/	173,146		(X)	b/r/	131,398
334513022E	Other continuous process instruments	32	(X)	b/	171,911		(X)	a/r/	166,494
334513022G	Other industrial type instruments	52	(X)		558,793		(X)		463,883
	Parts, supplies, accessories, other primary sensors, n.e.c., panelboards, and other equipment associated with process control instrumentation:								
334513032J	Primarily designed for temperature instruments	13	(X)		33,741		(X)		31,366
334513032L	Primarily designed for flow and liquid level instruments	27	(X)		106,641		(X)		95,301
334513032N	Primarily designed for continuous process instruments	17	(X)		45,071		(X)	r/	43,996
334513032P	Primarily designed for industrial type instruments	25	(X)	b/	50,578		(X)	b/r/	65,845
3345141	Integrating and totalizing meters for gas and liquids	49	(X)	a/	1,421,665		(X)		1,329,163
	Gas meters, consumption registering:								
	Diaphragm type; positive displacements; aluminum, iron, and tin case:								
3345141102	Residential size (up to 400 cu. ft/hr of 0.64 specific gravity gas, at 0.5 inches water drop), and other sizes including commercial and industrial 1/ 12/	7	a/ 2,744	a/	157,390		(D)		(D)
3345141105	Turbine type (all sizes)	5	b/ 4,494	c/	13,839	a/	3,998	a/	11,928
3345141107	Other gas meters, consumption registering 12/	6	(D)		52,984		(D)	a/	209,312
	Liquid meters, positive displacement with registers and counters:								
	Water meters, consumption registering:								
3345141109	Small meters, up to and including 1 inch 1/	12	5,918		327,300		5,413		300,065
3345141111	Intermediate meters, over 1 inch up to and including 2 inches	12	a/ 189,392		50,091		180,636		45,904
3345141113	Large meters, over 2 inches	12	(D)		126,432		(D)		122,810
3345141117	Other liquid meters; industrial bulk plants, pipeline, batching, treatment facilities, and liquid fuel dispensing meters 1/	17	b/ 1,293		265,966	c/r/	1,185		246,879
3345141119	Parts, components, and accessories for gas and liquid meters, sold separately	33	(X)		427,663		(X)		392,265
3345143	Counting devices, excluding motor vehicle instruments	41	(X)		534,229		(X)	a/r/	504,755
3345143101	Mechanical input 1/	10	(D)		33,606		(D)	r/	34,014
3345143103	Electrical input 1/	10	a/ 869		28,564	a/r/	884		30,000
3345143105	Electronic input 1/	14	3,214	a/	100,673		3,194	a/	100,066
3345143107	All other counting devices not specified above, including toll meters, fare collection equipment (systems), parking lot systems, etc., but excluding parking meters	13	(X)		364,860		(X)	a/r/	333,838
3345143109	Components and parts for counting devices (except parking meters), sold separately	9	(X)		6,526		(X)		6,837
3345145	Motor vehicle instruments	30	(X)		2,688,920		(X)	r/	2,957,822
3345145101	Speedometers (speedometers including odometers are classified as speedometers)	9	(X)		12,390		(X)		11,268
3345145103	Tachometers	8	(X)		22,015		(X)		18,454
3345145107	Fuel level gauges 13/	7	(X)		8,573		(X)		(D)
3345145109	Water temperature gauges	8	(X)		20,219		(X)		19,124
3345145111	Ammeters 13/	8	(X)		2,067		(X)		(D)
3345145113	Oil pressure gauges 13/	7	(X)		8,243		(X)	r/	13,855
3345145115	Instrument panels, including cluster modules	17	(X)		2,532,908		(X)	r/	2,809,033
3345145117	Other motor vehicle instruments	19	(X)		82,505		(X)		86,088
3345151	Integrating instruments, electrical	22	(X)	a/	620,390		(X)	a/	631,039
	Ac watt-hour meters:								
3345151101	Single phase 1/ 14/	7	(D)		(D)		6,484		267,000
3345151103	Polyphase 14/	4	(D)		245,542	a/	55,816	b/	8,438

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2004 and 2003
[Quantity in number of units. Value in thousands of dollars.]

Product code	Product description	No. of cos.	2004 Quantity		2004 Value	2003 Quantity		2003 Value
3345151105	Demand meters (kW and kVA), combined watt-hour and demand meters (single phase and polyphase), and combined watt-hour and time switch meters	11	1,206,123		184,827	945,426		155,097
3345151107	Other electrical integrating meters, including dc watt-hour meters, ampere-hour meters, and other miscellaneous integrating instruments not included in the above classifications	10	(X)	a/	153,282	(X)	a/	159,842
3345151109	Parts and accessories for electric integrating meters, including meter mountings and registers, sold separately	10	(X)		36,739	(X)		40,662
3345153	Test equipment for testing electrical, radio and communication circuits, and motors	310	(X)	a/	9,011,272	(X)		7,563,769
	Voltage, current, and resistance measuring equipment (except multimeters):							
	Electronic:							
3345153101	Digital	21	(X)		84,155	(X)		72,938
3345153103	Analog	20	(X)		36,142	(X)	a/	31,438
3345153105	Electrical, excluding panel meters 15/	10	(X)		(D)	(X)		(D)
	Multimeters:							
3345153106	Handheld electronic, digital and analog 15/	8	(X)		(D)	(X)		(D)
3345153108	Desktop electronic, digital and analog 15/	2	(X)		(D)	(X)		(D)
3345153109	Electrical 15/	3	(X)		221,065	(X)	c/	161,164
	Power and energy measuring equipment:							
3345153114	Electronic, digital and analog	11	(X)		66,935	(X)	c/	60,509
3345153118	Frequency counters, timers, and other frequency and time measuring equipment, excluding standards	17	(X)		74,848	(X)		58,863
3345153126	Waveform measuring and/or analyzing equipment, including oscilloscopes and spectrum analyzers	22	(X)		943,088	(X)	b/	526,419
	Signal generating equipment:							
3345153131	Audio 16/	10	(X)		(D)	(X)	a/	17,051
3345153133	RF (over 20 KHz to 890 MHz)	13	(X)		109,000	(X)		68,602
3345153135	Microwave (890 MHz and above) 16/	5	(X)	c/	45,578	(X)	c/r/	23,987
	Field strength and intensity measuring equipment, including RFI measuring equipment:							
3345153137	Electronic	13	(X)	c/	107,538	(X)	c/	100,420
3345153139	Electrical field measuring equipment 17/	3	(X)		(D)	(X)		(D)
	Impedance and standing wave ratio measuring equipment (transfer function measuring equipment):							
3345153143	Electronic impedance and related measuring equipment 17/	5	(X)	a/	18,945	(X)	a/	21,488
	Automatic test and measuring equipment:							
3345153149	Combination and/or group test sets	43	(X)		1,411,204	(X)	r/	1,497,713
	Component part test sets:							
	Semiconductor component test equipment:							
3345153153	Memory	12	(X)		159,218	(X)		25,145
3345153157	Microprocessor	13	(X)		565,225	(X)		343,982
3345153159	Other semiconductor component test equipment	35	(X)		2,250,551	(X)		1,596,004
3345153161	Circuit board loaded test equipment	11	(X)		191,547	(X)	r/	176,779
3345153163	Other component part test sets and equipment	20	(X)		186,267	(X)		91,520
3345153165	Equipment and subassembly test equipment, n.e.c., including disc drive testers, power supply testers, etc.	12	(X)		245,615	(X)	r/	193,349
3345153168	Standards and calibration equipment for test measuring equipment, including laboratory types (metered bench top, rack-mountable, or plug-in equipment)	23	(X)	a/	154,386	(X)	c/r/	189,949
	Analyzers for testing characteristics of internal-combustion engines, excluding aircraft:							
3345153171	Portable 18/	4	(X)		(D)	(X)		(D)
3345153173	Other 18/	3	(X)		158,468	(X)	b/r/	175,348
	Communications test equipment, n.e.c.:							
3345153175	Network analyzers	11	(X)		497,761	(X)		528,574
3345153177	Cable backplane and other continuity testers	8	(X)	a/	17,301	(X)	b/	15,762
3345153179	Fiber optics test equipment (OTDR, optical S/N meters, etc.)	7	(X)		82,397	(X)		391,305
3345153181	Other communications test, monitoring, and control equipment (except microwave)	25	(X)		437,101	(X)	a/r/	252,097
3345153183	Microwave test equipment, n.e.c, (1,300 MHz and above)	6	(X)	c/	35,977	(X)	a/	95,070

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2004 and 2003
[Quantity in number of units. Value in thousands of dollars.]

Product code	Product description	No. of cos.	2004 Quantity		2004 Value		2003 Quantity		2003 Value
	Logic test, development, and analysis equipment:								
3345153187	Microprocessor development systems 19/	5	(X)		(D)		(X)		(D)
3345153189	Pulse, function, and data generators and similar metered frequency synthesizers	8	(X)		110,876		(X)		82,007
3345153191	Other field service test and measurement equipment, logic probes, clips and pulsers 19/	8	(X)	c/	110,461		(X)	c/	28,954
3345153193	Other measuring and checking instruments for testing electrical, radio and communication circuits, and motors	32	(X)		327,937		(X)	a/r/	300,876
3345153195	Other analyzing instruments for checking electrical quantities	14	(X)		106,996		(X)		(D)
3345153197	Parts and components for test equipment for testing electrical, radio and communication circuits, and motors, sold separately	41	(X)	b/	254,690		(X)	b/	205,225
3345155	Instruments to measure electricity	79	(X)	a/	393,301		(X)	a/	389,683
	Electrical indicating instruments:								
	Panel type instruments:								
3345155101	Digital panel meters (DPM) between 0.05 percent and 1 percent, plus or minus one-digit accuracy, excluding precision DVM's and electronic counters	18	522,131	b/	30,815	c/r/	381,227	b/	36,841
3345155103	Analog solid state panel meters (generally of plus or minus 2-percent accuracy) with LED, LCD, or neon gas discharge display	10	13,835	a/	3,431	a/r/	9,242	r/	2,639
	Panel types other than ruggedized or sealed (generally of 2-percent accuracy):								
3345155105	A.c., including moving iron vane and dynamometer types	6	99,541	a/	2,195	a/	94,500	b/	2,101
3345155107	D.c., including rectifier and self-contained thermocouple types 1/	11	620	c/	17,668	b/	566	c/	15,704
3345155109	Panel types ruggedized or sealed (generally of 2-percent accuracy)	6	(D)		5,974	a/	(D)	a/r/	6,828
3345155113	All other panel type instruments, including ammeters and voltmeters for motor vehicles 1/	13	(S)		55,063	b/	2,900	b/	52,872
3345155116	Switchboard instruments which are generally of 1-percent accuracy (including a.c. and d.c) 20/	5	(D)		(D)		(D)		(D)
3345155119	Elapsed time meters (with and without reset) 1/ 20/	6	(D)	c/	19,096		(D)	c/	18,383
3345155121	Portable instruments which are generally capable of accuracies within plus or minus 2 percent of full scale indication, and can be enclosed in a case so that they can be moved and used at various locations, and which are an end product	16	507,264		108,332		514,421		106,246
3345155124	Electrical recording instruments (portable and for panel mounting) including oscillographic and direct deflecting types	19	19,136	c/	80,338	c/	18,082		88,013
	Parts and accessories for indicating and recording instruments:								
3345155129	Transducers for volts, amperes, watts, vars, frequency, temperature and power factor	17	(X)	a/	28,987		(X)	a/	24,188
3345155133	Other, including instrument shunts	15	(X)		41,402		(X)		35,868
3345160	Analytical and scientific instruments (except optical)	296	(X)	a/	8,814,906		(X)	a/	7,918,151
	Electrochemical instruments:								
3345160101	Ph electrodes and meters	20	(X)		107,988		(X)	b/	87,420
3345160103	Ion selective electrodes and meters	12	(X)	c/	44,034		(X)	c/	52,217
3345160107	Electrophoresis instruments	12	(X)		311,316		(X)		363,199
3345160109	Other (except process type), including photometers	8	(X)		24,182		(X)		20,662
3345160112	Chromatographic instruments, including gas, liquid, paper, gel, and thin layer	41	167,308	a/	1,048,920	a/	167,859		992,172
	Spectrophotometric instruments:								
3345160117	Atomic absorption	4	(X)	a/	13,246		(X)	r/	11,664
3345160119	Optical emission, including spark, arc, and glow, spectrographs, all other (except ICP)	5	(X)		26,705		(X)	a/	21,267
3345160121	Optical emission, including laser excited source, which includes laser microprobe source emission, laser source Raman, and laser microprobe source Raman spectrometers	6	(X)	b/	78,042		(X)	b/	73,382
3345160123	Optical emission with inductively coupled plasma, ICP	4	(X)	b/	93,511		(X)	b/	87,904

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2004 and 2003
[Quantity in number of units. Value in thousands of dollars.]

Product code	Product description	No. of cos.	2004 Quantity		2004 Value		2003 Quantity		2003 Value
3345160125	Infrared including Fourier transfer methods	16	(X)	a/	136,684		(X)	a/	132,408
3345160127	Ultraviolet, visible and colorimeters	25	(X)		149,283		(X)	r/	142,727
3345160129	Fluorescent instruments, including fluorometers (except chemicals)	14	(X)		82,038		(X)		70,741
3345160131	Color measuring devices	8	(X)		178,277		(X)		171,007
3345160133	Other, including vacuum ultraviolet, Raman, light scattering reflectors, helium glow, and light measuring	15	(X)	b/	40,570		(X)		36,355
3345160135	Thermal analysis instruments, including thermogravimetric analyzers (TGA), quantitative thermal analyzers (QTA) and differential termal analyzers (DTA)	10	(X)		165,539		(X)		149,504
3345160143	Photon excitation analyzers, including: X-ray fluorescence, simultaneous; X-ray fluorescence, sequential; X-ray fluorescence, sequential with diffraction; X-ray fluorescence, diffraction; X-ray diffraction; and energy dispersive systems (EDSs)	8	1,026	a/	47,093	b/	917		48,844
3345160145	Mass spectroscopy instrumentation	17	(X)		584,693		(X)	r/	476,814
	Clinical laboratory instrumentation, including instruments used in the clinical laboratory for measuring, analyzing, and processing clinical specimens	(NA)	(X)	c/	1,956,228		(X)	c/	1,623,986
3345160147	Chemistry (measure and identify substances, e.g., metabolites, enzymes, and drugs)	13	937,205	c/	801,782		742,710		666,146
3345160149	Hematology (measure and identify substances or cells contained in blood or substances influencing the development and clotting of blood, e.g., cell counting coagulation factors)	10	46,828	c/	648,039	a/	35,762	c/	530,533
3345160151	Microbiology (enumerate or identify pathogenic organisms or measure their susceptibility to antimicrobial agents)	6	(D)		109,033		(D)	a/	113,411
3345160155	Blood bank and immunology (process blood and specimens for testing; measure and identify, using immunoassay, substances in clinical specimens)	6	4,651		204,003	a/	4,096		165,016
3345160160	Other clinical laboratory instrumentation not specified above	14	24,105	b/	193,371	b/	18,116		148,880
3345160159	Organic elemental analysis instruments, including carbon, hydrogen, nitrogen, oxygen, and sulphur	13	31,758	c/	155,172		27,836		111,778
3345160161	Amino acid, protein and/or peptide, including chromatographic type	8	(D)		140,812		(D)		138,356
3345160163	Gas detectors 1/	21	(D)	a/	128,094	r/	2,824	a/r/	153,053
3345160164	Analytical and scientific laser systems and equipment	8	(D)		43,982		8,204		45,062
3345160165	Other analytical and scientific instruments, n.e.c., including molecular weight, monochrometers (analytical type), nephelometers (except meteorological), osmometers, particle size analyzers, photo multipliers, surface area analyzers, turbidometers, and breatholyzers	100	(X)	a/	1,928,752		(X)		1,857,227
3345160167	Parts, components, and accessories for analytical and scientific instruments, sold separately, including photo tubes, thermal conductivity sensors, thermopiles, etc.	116	(X)	a/	1,329,745		(X)	a/	1,050,402
3333141	Sighting, tracking, and fire control equipment optical type	41	(X)		787,500		(X)	a/r/	687,691
3333141101	Made from lenses, prisms, etc., produced in the same plant	10	(X)		302,694		(X)		291,265
3333141103	Made from purchased lenses, prisms, etc.	18	(X)		251,099		(X)	b/	235,321
3333141104	Sighting and tracking laser systems and equipment	7	(X)		200,368		(X)		132,144
3333141106	Night vision goggles and equipment 21/	1	(X)		(D)		(X)		-
3333141105	Parts and accessories 21/	14	(X)		33,339		(X)	r/	28,961
3333143	Optical instruments and lenses	156	(X)	a/	1,938,288		(X)	a/r/	1,702,561
3333143111	Binoculars, prismatic and nonprismatic, terrestrial and celestial telescopes	11	(X)		49,034		(X)	r/	64,258
3333143117	Other astronomical instruments (excluding radio astronomy), and parts and accessories (including mountings) for binoculars, optical telescopes and other astronomical equipment	12	(X)		25,302		(X)	r/	20,131

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2004 and 2003
[Quantity in number of units. Value in thousands of dollars.]

Product code	Product description	No. of cos.	2004 Quantity		2004 Value	2003 Quantity		2003 Value
3333143231	Optical test and inspection equipment, including standard sources, modulators, optical comparators, interferometers (except optical microscopes)	35	(X)		257,999	(X)	a/r/	203,652
3333143233	Optical microscopes	11	(X)	b/	36,580	(X)	b/	30,087
	Optical components:							
3333143235	Filters, including parts and accessories thereof	32	(X)	a/	132,541	(X)	a/	93,917
	Lenses (except ophthalmic focus lenses):							
3333143237	Unmounted lenses	40	(X)		260,602	(X)	r/	219,723
3333143242	Mounted lenses, including photographic	15	(X)		249,127	(X)		275,159
3333143243	Other (prisms, mirrors, etc.)	47	(X)	b/	170,180	(X)	b/	159,874
3333143245	Other optical instruments, including optical alignment and display instruments; excluding analytical instruments and binoculars and astronomical instruments listed above, and sighting and fire control equipment	37	(X)		532,862	(X)	r/	441,995
3333143247	Parts and accessories for other optical microscopes	9	(X)		10,881	(X)	b/	8,351
3333143249	Parts and accessories for other optical instruments	23	(X)		213,180	(X)		185,414
3345192	Aircraft engine instruments (except flight)	37	(X)		762,967	(X)	r/	888,234
3345192101	Temperature sensors, transmitters, and displays	22	(X)		335,777	(X)	r/	432,811
3345192103	Pressure ratio sensors, displays, and controls 22/ 23/	3	(X)		(D)	(X)		(D)
3345192105	Pressure and vacuum sensors, transmitters, and displays	12	(X)		59,825	(X)		54,488
3345192107	Fuel and oil flow rate sensors, transmitters, and displays, including mixture controls	6	(X)		32,114	(X)		34,065
3345192111	Tachometer generators and indicators 22/	6	(X)		11,388	(X)		(D)
3345192113	All other not specified above 22/	16	(X)		283,015	(X)		(D)
3345192115	Parts and components for aircraft engine instruments (except flight), sold separately 22/23/	10	(X)		40,848	(X)		366,870
3345194	Physical properties testing and inspection equipment and kinematic testing and measuring equipment	148	(X)	b/	1,712,938	(X)	a/r/	1,581,293
	Physical properties testing equipment, including hardness, tensile, stress, strain, abrasion, strength, torsion, wear, and similar testing equipment, including components and sold separately:							
3345194101	For testing of metals	22	(X)		489,093	(X)		445,286
3345194103	Other	42	(X)		345,617	(X)	a/r/	346,583
3345194105	Parts for physical properties testing equipment, sold separately	21	(X)	a/	19,051	(X)	a/r/	18,688
	Physical properties inspection equipment, including flaw detection, thickness measuring, and similar inspection equipment, including components and parts, sold separately:							
3345194107	For testing of metals	18	(X)	b/	218,136	(X)	a/	202,577
3345194109	Measuring and checking flow of fluids	14	(X)	c/	103,204	(X)	c/	75,084
3345194111	Other	37	(X)		253,818	(X)	r/	215,029
3345194113	Parts for physical properties inspection equipment, sold separately	24	(X)	b/	53,085	(X)	b/r/	60,112
3345194115	Kinematic testing and measuring equipment, including vibration, acceleration, and other motion testing equipment	30	(X)	a/	228,845	(X)	b/	213,570
3345194117	Parts for kinematic testing and measuring equipment, sold separately	6	(X)	c/	2,089	(X)	c/	4,364
3345195	Nuclear radiation detection and monitoring instruments	49	(X)	a/	592,420	(X)		534,363
3345195101	Radiation detecting elements, including ion chambers	15	b/ 86,356	a/	77,326	b/ 71,667		65,409
3345195105	Nuclear monitoring instruments, including environmental, personal dosimetery, and medical monitors, both stationary and portable types	14	(D)		171,998	(D)		161,366
3345195107	Sample and flow counting systems, manual and automatic 24/	5	(X)		(D)	(X)		(D)
3345195109	Scalers 25/	5	(D)		(D)	(D)		(D)
3345195114	Pulse analyzers,including single and multichannel, and nuclear spectrometers 24/	5	(D)		(D)	(D)		(D)
3345195119	Measurement and control devices using beta, gamma, or neutron gauge technology	8	(X)		39,665	(X)	a/r/	37,642
3345195121	Nuclear power supplies 25/	6	(X)		21,723	(X)		19,948

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2004 and 2003
[Quantity in number of units. Value in thousands of dollars.]

Product code	Product description	No. of cos.	2004 Quantity		2004 Value	2003 Quantity		2003 Value
3345195123	Neutron and photon activation analysis systems 24/	3	(X)	b/	18,605	(X)		17,252
3345195125	Nuclear instrument modules, n.e.c.	10	(X)		41,157	(X)	b/	52,415
3345195127	Other nuclear radiation detection and monitoring instruments	15	(X)	a/	147,936	(X)		120,321
3345195129	Parts and components for nuclear radiation detection and monitoring instruments, sold separately	16	(X)	b/	74,010	(X)	b/r/	60,010
3345197	Commercial, geophysical, meteorological, and general-purpose instruments	139	(X)	a/	1,357,869	(X)		1,290,295
3345197101	Barometers and barographs, aneroid and mercurial types, including recorders, wall, pendant, meteorological, hygro-thermographs, barometer-thermometer-humidity combinations	9	(X)		1,552	(X)	r/	1,392
3345197103	Hydrometers, glass, all types, including thermo-hydrometers 1/	4	(D)	b/	779	(D)	b/	777
	Liquid-in-glass thermometers:							
3345197105	Engraved (etched) stem, thermoregulators, deep-sea reversing, laboratory, encased glass, ASTM standards, pocket case, max-min registering (except clinical thermometers)	9	(X)	c/	2,355	(X)	c/	2,461
3345197107	Threaded and flanged types, fixed and adjustable angle, inline and duct installations, for process, food, air-conditioning, and refrigeration installations 1/	11	482	b/	7,853	385	b/	6,394
3345197109	Household and commercial thermometers such as wall, outdoor, domestic science, cupcase, filled systems, and indoor-outdoor 1/	8	1,576		2,684	1,773		3,932
	Bimetal thermometers:							
3345197111	Threaded and flanged types, for pipeline and duct installations, including general and pocket test 1/	13	1,451	a/	20,091	1,126	a/	18,015
3345197113	Domestic science, commercial general test, indoor, outdoor, desk models, oven, refrigerator 1/	8	(D)		7,394	(D)		6,924
3345197115	Humidity indicating and recording instruments such as bi-hygroscopic and hygroscopic element, indicators, psychrometers, wet and dry bulb, hygrographs, indicating hygrometers	17	(X)		29,044	(X)		26,351
3345197117	Other thermometers (infrared, meteorological, commercial, and industrial)	17	(X)	a/	96,362	(X)	b/r/	80,951
3345197123	Meteorological electronics equipment and radio astronomy equipment (automatic weather stations and weather tracking equipment, ceilometers, transitometers, space satellite meteorological systems, and specialized meteorological telemetering equipment)	19	(X)		273,522	(X)	a/	347,884
3345197125	Other meteorological instruments, including speed and direction instruments, rain gauges, thermographs, and parts, sold separately	18	(X)	b/	43,987	(X)	b/	40,473
3345197127	Seismic instruments	11	(X)		244,913	(X)		200,677
3345197129	All other geophysical instruments and equipment	27	(X)		184,491	(X)	r/	153,144
3345197130	Commercial, geophysical, and meteorological laser systems and equipment	-	(X)		-	(X)		-
3345197131	Other commercial and industrial instruments (except aircraft), including compasses, altimeters, test equipment for hydraulic and pneumatic systems and controls, and environmental gas detectors, sold separately	38	(X)		410,598	(X)	r/	369,508
3345197133	Parts and accessories for meteorological and commercial and industrial instruments	22	(X)	b/	32,244	(X)	a/	31,412
3345199	Surveying and drafting instruments and associated equipment	25	(X)	c/	233,221	(X)	c/r/	220,535
3345199101	Surveying instruments, including alidades, transits, plumb bobs, sextants, theodolites, surveyors, compasses, surveyors levels, tapes, etc.	15	(X)	c/	149,008	(X)	c/r/	144,256
3345199103	Parts and components for surveying instruments, sold separately	6	(X)		(D)	(X)		(D)
3345199105	Drafting instruments and machines, manual and automatic, drafting tables, plotting instruments, slide rules, T-squares, drafting templates, rules, etc.	9	(X)		(D)	(X)		(D)

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2004 and 2003
[Quantity in number of units. Value in thousands of dollars.]

Product code	Product description	No. of cos.	2004		2003	
			Quantity	Value	Quantity	Value
3345199108	Surveying and drafting laser systems and equipment	1	(X)	(D)	(X)	(D)
3345199211	Other surveying and drafting instruments and associated equipment	2	(X)	(D)	(X)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified. r/Revised by 5 percent or more from previously published data. S Does not meet publication standards. X Not applicable.

1/The quantity for this product code is in thousands of units.
2/Product codes 3345111217, 3345111219, 3345111221, and 3345111223 are combined with product code 3345111225 to avoid disclosing data for individual companies.
3/Product code 3345113209 is combined with product code 3345113211 to avoid disclosing data for individual companies.
4/Product codes 3345113313, 3345113315, and 3345113425 are combined with product code 3345113429 to avoid disclosing data for individual companies.
5/Product codes 3345113655, 3345113657, 3345113659, and 3345113665 are combined with product code 3345113667 to avoid disclosing data for individual companies.
6/Product codes 3391118243 and 3391118231 are combined with product code 3391118233 to avoid disclosing data for individual companies.
7/For 2003, product codes 3345120107 and 3345120115 are combined with product code 3345120222 to avoid disclosing data for individual companies.
8/Product code 3345130113 and 3345130119 are combined with product code 3345130122 to avoid disclosing data for individual companies.
9/Product code 3345130225 is combined with product code 3345130227 to avoid disclosing data for individual companies.
10/Product code 3345130237 is combined with product code 3345130239 to avoid disclosing data for individual companies
11/Product code 3345130253 is combined with product code 3345130255 to avoid disclosing data for individual companies
12/For 2003, product code 3345141102 is combined with product code 3345141107 to avoid disclosing data for individual companies
13/For 2003, product codes 3345145107 and 3345145111 are combined with product code 3345145113 to avoid disclosing data for individual companies.
14/For 2004, product code 3345151101 is combined with product code 3345151103 to avoid disclosing data for individual companies
15/Product codes 3345153105, 3345153106, and 3345153108 are combined with product code 3345153109 to avoid disclosing data for individual companies.
16/For 2004, product code 3345153131 is combined with product code 3345153135 to avoid disclosing data for individual companies
17/Product code 3345153139 is combined with product code 3345153143 to avoid disclosing data for individual companies
18/Product code 3345153171 is combined with product code 3345153173 to avoid disclosing data for individual companies
19/For 2004, product code 3345153187 is combined with product code 3345153191 to avoid disclosing data for individual companies
20/Product code 3345155116 is combined with product code 3345155119 to avoid disclosing data for individual companies.
21/For 2004, product code 3333141106 is combined with product code 3333141105 to avoid disclosing data for individual companies
22/For 2003, product codes 3345192103, 3345192111, and 3345192113 are combined with product code 3345191115 to avoid disclosing data for individual companies.
23/Product code 3345192103 is combined with product code 3345192115 to avoid disclosing data for individual companies
24/Product codes 3345195107 and 3345195114 are combined with product code 3345195123 to avoid disclosing data for individual companies.
25/Product code 3345195109 is combined with product code 3345195121 to avoid disclosing data for individual companies

Note: Percent of estimation of each item is indicated as follows: a/10 to 25 percent of this item has been estimated. b/26 to 50 percent of this item has been estimated. c/Over 50 percent of this item has been estimated.

Table 3. Shipments, Exports, and Imports of Selected Instruments and Related Products: 2004
[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value of f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption (value) 2/ 3/
332911F101, 103, 105, 107, 109, 111, 113	Pneumatic actuated automatic valves	623,201	114,706	58,763
332911F115, 117, 122, 125, 127, 129	All other control valves, including electric and electrohydraulic	422,807	577,425	795,815
332911F131, 133, 135, 137, 139, 141	Self-generating power actuated regulator valves	1,088,560	200,799	548,448
332911H101, 103, 106, 109	Solenoid-operated valves (except nuclear and fluid transfer)	500,422	191,502	764,258
3345111101	Compasses (all types)	329,751	83,226	102,953
3345111103, 105, 107, 110, 113, 115, 217, 219, 221, 223, 225, 227, 229, 231, 233, 335. 437 3345113101, 103, 105	Search, detection, aeronautical, nautical, and navigational and guidance systems, equipment, and instruments, n.e.c. (except aircraft engine instruments) 4/	6,501,915	947,927	494,152
3345113207, 209, 211, 313, 315, 317, 319, 321, 323	Radar systems and equipment 5/	5,520,748	683,440	139,696
3345113651	Radio navigational aid receivers and displays	754,095	355,613	1,010,820
3345113665	Automatic pilots	(D)	228,593	53,884
3345113425, 427, 429, 431, 433, 435, 437, 441, 443, 545, 547, 549, 653, 655, 657, 659, 661, 663, 667, 669, 673, 681	Sonar search, detection, tracking, and communication systems and equipment, including ASW (sonar telephone, communication equipment, depth finding, fire control, fusing guidance, hydrophones, mapping, sonabuoys, navigation, sonar fish finders, sonar finders, sonar range instrumentation, and other) 6/	18,344,710	87,699	203,739
3345120102, 225	Temperature responsive automatic controls (thermostats)	608,038	118,543	466,300
3345120105, 107, 113, 115, 219, 222, 223, 227	Pressure responsive automatic, hydraulic automatic, pneumatic automatic, and automatic control, n.e.c.	1,136,035	993,975	1,740,860
3345120229	Parts and components for automatic controls, sold separately	79,797	633,948	562,324
3345130	Process control instruments	6,484,995	1,005,198	954,826
3345141102, 105, 107	Gas meters, consumption registering (except parts)	224,213	30,909	16,502
3345141109, 111, 113, 117	Liquid meters (except parts)	769,789	68,184	10,271
3345141119	Parts, components, and accessories for gas and liquid meters, sold separately	427,663	66,596	144,007
3345143101, 103, 105, 107 3345145, 3345192, 3345155	Counting devices, n.e.c., including taxi meters and parts, parking meters and parts, aircraft engine and motor vehicle instruments	4,372,891	366,508	1,163,161
3345151	Electricity meters	620,390	65,472	79,185
3345153101, 103, 105	Voltage, current, and resistance measuring equipment (except multimeters) 7/	120,297	205,341	145,114
3345153114	Power and energy testing equipment	66,935	244,655	80,863
3345153171, 173	Analyzers for testing characteristics of internal-combustion engines (except aircraft)	158,468	234,546	137,924
3345153131, 133, 135	Signal generating equipment	154,578	95,533	50,103
3345153106, 108, 109, 118, 126, 137, 139, 143, 149, 153, 157, 159, 161, 163, 165, 168, 175, 177, 179, 181, 183, 187, 189, 193	Test equipment for testing multimeters, electrical, radio and communication circuits, and motors, n.e.c.	(D)	3,211,453	907,119
3391118, 3345160	Laboratory, analytical, and scientific instruments	10,963,959	2,449,078	1,610,992
3333141	Sighting, tracking, and fire control equipment, optical type	787,500	53,895	106,005

Table 3. Shipments, Exports, and Imports of Selected Instruments and Related Products: 2004
[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value of f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption (value) 2/ 3/
3333143111, 117	Binoculars and astronomical instruments and parts and accessories	74,336	135,124	296,884
3333143231, 235, 237, 242, 243, 245, 247, 249	Optical instruments and lenses, n.e.c.	1,827,372	2,365,017	284,842
3333143233	Microscopes, optical	36,580	63,886	273,918
3345194	Physical properties testing and inspection equipment and kinematic testing and measuring equipment	1,712,938	548,072	110,695
3345195	Nuclear radiation detection and monitoring instruments and equipment	592,420	274,579	131,878
3345197105, 107, 109	Liquid-in-glass thermometers, n.e.c.	12,892	7,590	16,195
3345197111, 113, 117	Thermometers (except liquid-in-glass type)	123,847	26,915	242,504
3345197129	Geophysical instruments and equipment	184,491	221,832	172,606
3345197127	Seismic instruments	244,913	18,938	19,011
3345197101, 115, 123, 125	Commercial, geophysical, meteorlogical, and general-purpose instruments, n.e.c.	348,105	251,419	285,470
3345199101, 103	Surveying instruments (except photogrammetrical and geodetic equipment)	(D)	56,950	222,462
3345199105	Drafting intruments and machines, manual and automatic	(D)	30,182	47,818

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified.

1/Source: Census Bureau report, EM 545, "U.S. Exports."
2/Source: Census Bureau report, IM 145, "U.S. Imports for Consumption."
3/Value represents the c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus import duties.
4/Product code 3345113105 is excluded from manufacturers' shipments to avoid disclosing data for individual companies.
5/Product codes 3345113313 and 3345113315 are excluded from manufacturers' shipments to avoid disclosing data for individual companies.
6/Product codes 3345113425 and 3345113429 are excluded from manufacturers' shipments to avoid disclosing data for individual companies.
7/Product code 3345153105 is excluded from manufacturers' shipments to avoid disclosing data for individual companies.

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes and HTSUSA Import Codes: 2004

Product code	Product description	Export code 1/	Import code 2/
332911F101, 103, 105, 107, 109, 111, 113	Pneumatic actuated automatic valves	8481.80.9035	8481.80.9035
332911F115, 117, 122, 125, 127, 129	All other control valves, including electric and electrohydraulic	8481.80.9020 8481.80.9030 8481.80.9045 8481.80.9050	8481.80.9020 8481.80.9030 8481.80.9045 8481.80.9050
332911F131, 133, 135, 137, 139, 141	Self-generating power actuated regulator valves	8481.80.9015	8481.80.9015
332911H101, 103, 106, 109	Solenoid-operated valves (except nuclear and fluid transfer)	8481.80.9005	8481.80.9005
3345111101	Compasses (all types)	9014.10.1040 9014.10.1080 9014.10.6040 9014.10.6080 9014.10.7040 9014.10.7080 9014.10.9040 9014.10.9080	9014.10.1000 9014.10.6000 9014.10.7030 9014.10.7060 9014.10.9000
3345111103, 105, 107, 110, 113, 115, 217, 219, 221, 223, 225, 227, 229, 231, 233, 335.437 3345113101, 103, 105	Search, detection, aeronautical, nautical, and navigational and guidance systems, equipment, and instruments, n.e.c. (except aircraft engine instruments)	9014.20.2000 9014.20.6000 9014.20.8040 9014.20.8080 9014.90.0000	9014.20.2000 9014.20.6000 9014.20.8040 9014.20.8080 9014.90.2040 9014.90.2080 9014.90.6000 9014.80.1000
3345113207, 209, 211, 313, 315, 317, 319, 321, 323	Radar systems and equipment	8526.10.0010 8526.10.0020 8526.10.0070	8526.10.0020 8526.10.0040
3345113651	Radio navigational aid receivers and displays	8526.91.0010 8526.91.0030 8526.91.0070	8526.91.0020 8526.91.0040
3345113665	Automatic pilots	9014.20.4000 9014.90.0000	9014.20.4000 9014.90.1000
3345113425, 427, 429, 431, 433, 435, 437, 441, 443, 545, 547, 549, 653, 655, 657, 659, 661, 663, 667, 669, 673, 681	Sonar search, detection, tracking, and communication systems and equipment, including ASW (sonar telephone, communication equipment, depth finding, fire control, fusing guidance, hydrophones, mapping, sonabuoys, navigation, sonar fish finders, sonar range instrumentation, and other)	9014.80.2000 9014.80.6000	9014.80.2000 9014.80.4000 9014.80.5000
3345120102, 225	Temperature responsive automatic controls (thermostats)	9032.10.0000	9032.10.0030 9032.10.0060 9032.10.0090
3345120105, 107, 113, 115, 219, 222, 223, 227	Pressure responsive automatic, hydraulic automatic, pneumatic automatic, and automatic controls, n.e.c.	9032.20.0000 9032.81.0080 9032.89.6020 9032.89.6085	9032.20.0000 9032.81.0080 9032.89.6015 9032.89.6025 9032.89.6085

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes and HTSUSA Import Codes: 2004

Product code	Product description	Export code 1/	Import code 2/
3345120229	Parts and components for automatic controls, sold separately	9032.90.0000	9032.90.2000 9032.90.4000 9032.90.6020 9032.90.6040 9032.90.6060 9032.90.6080
3345130	Process control instruments	9032.81.0040 9032.81.0080 9032.89.6030 9032.89.6040 9032.89.6050 9032.89.6060 9032.89.6070 9032.89.6075	9032.81.0020 9032.81.0060 9032.89.6030 9032.89.6040 9032.89.6050 9032.89.6060 9032.89.6070 9032.89.6075
3345141102, 105, 107	Gas meters, consumption registering (except parts)	9028.10.0000	9028.10.0000
3345141109, 111, 113, 117	Liquid meters (except parts)	9028.20.0000	9028.20.0000
3345141119	Parts, components, and accessories for gas and liquid meters, sold separately	9028.90.0080	9028.90.0080
3345143101, 103, 105, 107 3345145, 3345192, 3345155	Counting devices, n.e.c., including taxi meters and parts, parking meters and parts, and motor vehicle instruments	9106.20.0000 9028.90.0040 9029.10.0000 9029.20.4040 9029.20.5000 9029.90.0000	9106.20.0000 9029.10.4000 9028.90.0040 9029.10.8000 9029.20.4040 9029.20.4080 9029.90.2000 9029.90.8040 9029.90.8080
3345151	Electricity meters	9028.30.0000	9028.30.0000
3345153101, 103, 105	Voltage, current, and resistance measuring equipment (except multimeters)	9030.39.0040	9030.39.0040
3345153114	Power and energy testing equipment	9030.39.0080	9030.39.0080
3345153171, 173	Analyzers for testing characteristics of internal-combustion engines (except aircraft)	9031.80.8060 9031.80.8070	9031.80.8060 9031.80.8070
3345153131, 133, 135	Signal generating equipment	8543.20.0000	8543.20.0000
3345153106, 108, 109, 118, 126, 137, 139, 143, 149, 153, 157, 159, 161, 163, 165, 168, 175, 177, 179, 181, 183, 187, 189, 193	Test equipment for testing multimeters, electrical, radio and communication circuits, and motors, n.e.c.	9029.20.6000 9030.31.0000 9030.82.0000 9030.20.0000 9030.90.8010 9030.90.8020 9030.90.8030 9030.90.8040 9030.90.8050 9030.90.8060	9029.20.6000 9030.31.0000 9030.82.0000 9030.90.4500 9030.90.8400 9030.90.8810 9030.90.8820 9030.90.8830 9030.90.8840 9030.90.8855 9030.90.8860

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes and HTSUSA Import Codes: 2004

Product code	Product description	Export code 1/	Import code 2/
3391118, 3345160	Laboratory, analytical, and scientific instruments	9027.50.5000 9027.50.2000 9027.20.2000 9027.20.6050 9027.20.5030 9027.20.9000 9027.30.4040 9027.30.4080 9027.80.2000 9027.80.3100 9027.80.3200 9027.80.3500 9027.80.8000 9027.90.2000 9012.10.0000	9027.20.5030 9027.20.5050 9027.20.5060 9027.20.5080 9027.20.8030 9027.20.8060 9027.20.8090 9027.30.4040 9027.30.4080 9027.50.4015 9027.50.4020 9027.80.4520 9027.80.4530 9027.80.4560 9027.80.4590 9027.90.8400 9027.90.8800 9012.10.0000 9027.80.8030 9027.80.8060 9027.80.8090
3333141	Sighting, tracking, and fire control equipment, optical type	9013.10.2000 9013.10.4000	9013.10.1000 9013.10.3000 9013.10.4000
3333143111, 117	Binoculars and astronomical instruments and parts and accessories	9005.10.0020 9005.10.0040 9005.10.0080 9005.80.4020 9005.80.4040 9005.80.6000 9005.90.0000	9005.10.0020 9005.10.0040 9005.10.0080 9005.80.4020 9005.80.4040 9005.80.6000 9005.90.4000 9005.90.8000
3333143231, 235, 237, 242, 243, 245, 247, 249	Optical instruments and lenses, n.e.c.	9031.41.0000 9031.90.0000	9031.41.0020 9031.41.0040 9031.41.0060 9031.90.4500 9031.90.5400 9031.90.5800
3333143233	Microscopes, optical	9011.10.0000 9011.20.0000 9011.80.0000 9011.90.0000	9011.10.4000 9011.10.8000 9011.20.4000 9011.20.8000 9011.80.0000 9011.90.0000
3345194	Physical properties testing and inspection equipment and kinematic testing and measuring equipment	9024.10.0000 9024.80.0000 9024.90.0000	9024.10.0000 9024.80.0000 9024.90.0040 9024.90.0080
3345195	Nuclear radiation detection and monitoring instruments and equipment	9030.10.0000 9030.90.4000	9030.10.0000
3345197105, 107, 109	Liquid-in-glass thermometers, n.e.c.	9025.11.4000	9025.11.4000
3345197111, 113, 117	Thermometers (except liquid-in-glass type)	9025.19.4000 9025.19.8040	9025.19.8040 9025.19.8080
3345197129	Geophysical instruments and equipment	9015.80.8040	9015.80.8040

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes and HTSUSA Import Codes: 2004

Product code	Product description	Export code 1/	Import code 2/
3345197127	Seismic instruments	9015.80.6000	9015.80.6000
3345197101, 115, 123, 125	Commercial, geophysical, meteorlogical, and general-purpose instruments, n.e.c.	9025.80.1500 9025.80.5050 9015.80.8080 9025.90.0000	9025.80.1500 9025.20.8000 9025.80.1000 9025.80.2000 9025.80.3500 9025.80.4000 9025.80.5000 9025.90.0000 9015.80.8080
3345199101, 103	Surveying instruments (except photogrammetrical and geodetic equipment)	9015.10.0000 9015.20.0000 9015.30.0000	9015.10.4000 9015.10.8000 9015.20.4000 9015.20.8000 9015.30.4000 9015.30.8000 9015.90.0010 9015.90.0020 9015.90.0030
3345199105	Drafting intruments and machines, manual and automatic	9017.10.0000 9017.20.4000 9017.20.8060	9017.10.4000 9017.10.8000 9017.20.4000 9017.20.7000 9017.20.8080

n.e.c. Not elsewhere classified.

1/Source: 2004 edition, Harmonized System-Based Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.

2/Source: Harmonized Tariff Schedule of the United States, Annotated (2004).

Appendix.
General CIR Survey Information, Explanation of General Terms and Historical Note

GENERAL

The CIR program has been providing monthly, quarterly, and annual measures of industrial activity for many years. Since 1904, with its cotton and fats and oils surveys, the CIR program has formed an essential part of an integrated statistical system involving the quinquennial economic census, manufacturing sector, and the annual survey of manufactures. The CIR surveys, however, provide current statistics at a more detailed product level than either of the other two statistical programs.

The primary objective of the CIR program is to produce timely, accurate data on production and shipments of selected products. The data are used to satisfy economic policy needs and for market analysis, forecasting, and decision making in the private sector. The product-level data generated by these surveys are used extensively by individual firms, trade associations, and market analysts in planning or recommending marketing and legislative strategies, particularly if their industry is significantly affected by foreign trade. Although production and shipments information are the two most common data items collected, the CIR program collects other measures also such as inventories, orders, and consumption. These surveys measure manufacturing activity in important commodity areas such as textiles and apparel, chemicals, primary metals, computer and electronic components, industrial equipment, aerospace equipment, and consumer goods.

The CIR program uses a unified data collection, processing, and publication system. The U.S. Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic census, manufacturing sector. The manufacturing sector provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is too large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. The CIR program includes a group of mandatory and voluntary surveys. Typically the monthly and quarterly surveys are conducted on a voluntary basis. Those companies that choose not to respond to the voluntary surveys are required to submit a mandatory annual counterpart corresponding to the more frequent survey.

NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS), 1997

The adoption of the North American Industry Classification System (NAICS) in the 1997 Economic Census has had a major impact on the comparability of current and historic data. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those that left manufacturing are logging and portions of publishing. Prominent among the industries that came into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. The net effect of the classification changes are such that if the 1997 value of shipments data for all manufacturers were tabulated on an SIC basis, it would be approximately 3 percent higher.

Listed below are the NAICS sectors:

21 Mining
22 Utilities
23 Construction
31-33 Manufacturing
42 Wholesale Trade
44-45 Retail Trade
48-49 Transportation and Warehousing
51 Information
52 Finance and Insurance
53 Real Estate and Rental and Leasing
54 Professional, Scientific, and Technical Services
55 Management of Companies and Enterprises
56 Administrative and Support and Waste Management and Remediation Services
61 Educational Services
62 Health Care and Social Assistance
71 Arts, Entertainment, and Recreation
72 Accommodation and Food Services
81 Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

FUNDING

The Census Bureau funds most of the surveys. However, a number of surveys are paid for either fully or partially by other Federal Government agencies or private trade associations. A few surveys are mandated, but all are authorized by Title 13 of the United States Code.

RELIABILITY OF DATA

Survey error may result from several sources including the inability to obtain information about all cases in the survey, response errors, definitional difficulties, differences in the interpretation of questions, mistakes in recording or coding the reported data, and other errors of collection, response, coverage, and estimation. These nonsampling errors also occur in complete censuses. Although no direct measurement of the biases due to these nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is the imputing of data for nonrespondents, for late reporters, and for data that fail logic edits. Missing figures are imputed based on period-to-period movements shown by reporting firms. A figure is considered to be an impute if the value was not directly reported on the questionnaire, directly derived from other reported items, directly available from supplemental sources, or obtained from the respondent during the analytical review phase. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are suppressed or footnoted. The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse, because the actual yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increases as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

DATA REVISIONS

Statistics for previous years may be revised as the result of corrected figures from respondents, late reports for which imputations were originally made, or other corrections. Data that have been revised by more than 5 percent from previously published data are indicated by footnotes.

DISCLOSURE

The Census Bureau collects the CIR data under the authority of Title 13, United States Code, which specifies that the information can only be used for statistical purposes and cannot be published or released in any manner that would identify a person, household, or establishment. "D" indicates that data in the cell have been suppressed to avoid disclosure of information pertaining to individual companies.

EXPLANATION OF GENERAL TERMS

Capacity. The maximum quantity of a product that can be produced in a plant in 1 day if operating for 24 hours. Includes the capacity of idle plants until the plant is reported to be destroyed, dismantled, or abandoned.

Consumption. Materials used in producing or processing a product or otherwise removing the product from the inventory.

Exports. Includes all types of products shipped to foreign countries, or to agents or exporters for reshipment to foreign countries.

Gross shipments. The quantity or value of physical shipments from domestic establishments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale or use. Shipments of products purchased for resale are omitted. Shipments of products made under toll arrangements are included.

Interplant transfers. Shipments to other domestic plants within a company for further assembly, fabrication, or manufacture.

Inventories. The quantity or value of finished goods, work in progress, and materials on hand.

Machinery in place. The number of machines of a particular type in place as of a particular date whether the machinery was used for production, prototype, or sampling, or was idle. Machinery in place includes all machinery set up in operating positions.

Net receipts. Derived by subtracting the materials held at the end of the previous month from the sum of materials used during the current month.

Production. The total volume of products produced, including: products sold; products transferred or added to inventory after adjustments for breakage, shrinkage, and obsolescence, plus any other inventory adjustment; and products that undergo further manufacture at the same establishment.

Quantities produced and consumed. Quantities of each type of product produced by a company for internal consumption within that same company.

Quantity and value of new orders. The sales value of orders received during the current reporting period for products and services to be delivered immediately or at some future date. Also represents the net sales value of contract change documents that increase or decrease the sales value of the orders to which they are related, when the parties concerned are in substantial agreement as to the amount involved. Included as orders are only those that are supported by binding legal documents such as signed contracts or letter contracts.

Quantity and value of shipments. The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Shipments to a company's own branches are assigned the same value as comparable appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

Stocks. Total quantity of ending finished inventory.

Unfilled orders (backlog). Calculated by adding net new orders and subtracting net sales from the backlog at the end of the preceding year.

HISTORICAL NOTE

Data on selected instruments and related products have been collected by the Census Bureau since 1961. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library.